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OF

FORESTRY,

AGRICULTURE, SHIKAR & TRAVEL

EDITED BY

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THE

INDIAN FORESTER.

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Recruits for the Upper Controlling Staff of the Forest Department.

Some information with regard to the nature of the examination which competitors for the Indian Forest Department are now required to pass, appeared in the January number of *The Forester* of the present year. The results of the examination held for candidates for six appointments to the Indian Forest Department last June are now public property, and a few additional remarks with regard to the arrangement of the subjects, which may now be taken up and its effect on the character of the examination, may be of interest to your readers.

The subjects which may be taken up are, as was the case in June, 1893, divided into three classes :—

Class I.—*Obligatory.*

Class II.—*Optional*, with the proviso that only two of the nine subjects which are included in this course, may be taken up by any one candidate.

Class III.—*Voluntary.* This term embraces a small group of subjects, which may *all* be taken up--and were all taken up—by every candidate.

Class I includes Elementary Mathematics, English Composition and German.

Class II contains Higher Mathematics, French, Latin, Greek, English History, Elementary Botany, Elementary Chemistry, Elementary Physics and the elements of Geology.

Class III consists of Freehand and Geometrical Drawing. Thirty-nine men presented themselves for the six places offered for competition, and every candidate in addition to the obligatory subjects took up both the voluntary subjects included in Class III.

This seems to indicate that the candidates would have all taken up more subjects if they had been allowed to, and that the system at present in force has a tendency to confine the knowledge of a candidate within comparatively narrow limits.

The maximum number of marks which a candidate could obtain was 10,300, and of this number the first man got 6,883, and the last successful candidate obtained 6,501, and the 39th man 3,140. Had any of the first six men omitted to take up the voluntary subjects, they would not have obtained an appointment. All the successful candidates, with one exception, obtained more than half marks in each of the obligatory subjects.

Of the optional subjects 34 men out of the 39 candidates took up French, 28 took up Latin, 7 Chemistry, 7 Geology, 3 Physics, 3 English history, 2 Botany. No one took up Greek, which seems to point to the influence of the modern school side of the public educational establishments of the present day.

It is a matter for congratulation that so many candidates took up French as one of their optional subjects, but it is much to be regretted that of the whole number of candidates who presented themselves for examination, only 3 selected two of the branches of Natural Science as their two optional subjects, and also that neither of these men were among the successful candidates. Of the remaining competitors, only 13 attempted even one of the four branches of Natural Science open to them!

The competitive examinations for Forest officers and Police officers are, it is understood, identically the same, and are held together. This arrangement may save the examiners trouble, but is it possible to bring together two professions which have so little in common? A Forest officer must be, or be made, more or less a scientific man, and should be essentially a student of nature; while a Police officer requires no science, and has chiefly to learn the characteristics and peculiarities of his fellow men, and yet one and the same examination is held to be sufficient test for the selection of men for both these services!

Forestry has long been practised in France, under much the same wide conditions as in India, and as the Indian Forest service has been so long and so intimately connected with the French service, a thorough knowledge of French is just as important to an Indian Forest officer as is a good and sufficient knowledge of German. French is more generally taught at schools, and is more easily acquired, at any rate up to the standard required to enable a forest officer to travel with profit in France, and to read professional works in French with advantage. It ought to be certainly, therefore, a compulsory subject just as much as German is. The Entrance examination test in 1885, the first year that men were sent to Coopers Hill, was similar to that which was in vogue

when men were sent to France. All the subjects, with three exceptions, were compulsory. These three exceptions were Free-hand drawing, Geology and Mineralogy, and, I think, Botany. The elements of Physics, Chemistry and Mechanics were all compulsory subjects, and rightly so.

The changes in the syllabus of the competitive examination appear to have been made with a view to attract public school men, as the subjects which are required seem to have been altered so as to fit in with the ordinary school curriculum, where the modern side has not been properly developed. The result of the change of the syllabus has been that men who have no knowledge of the chief branches of natural science are attracted, instead of, as formerly, men who had devoted a considerable proportion of their time to those subjects.

Only one of the six successful candidates at the examination held in June and July last, took up any of the branches of natural science, and he only took up one of the newer branches offered, namely Physics! Of course, it may be urged that the natural sciences are taught at Coopers Hill, but is it not a fact that they can be taught equally well elsewhere? And also that if the men who now enter the Forest Department were required, as they were formerly, to have a thorough knowledge of Elementary Chemistry, Physics and Geology, more time would be available for their instruction in those subjects which they should know and which cannot be thoroughly acquired in public schools and similar educational establishments?

A man who has studied science for pleasure, should, other things being equal, make a better Forest Officer than one who has no inclination for scientific subjects, and consequently natural science should be required from such students as offer themselves as candidates for the Forest Department, in order to ensure, as far as is possible, their having a taste for those subjects which, when developed, will prove most valuable to a Forest Officer.

A third year has lately been added to the course of instruction of Forest Officers at Coopers Hill. May it not be that those advantages which ought to accrue from this third year are annulled to a great extent, by the fact that now students have to devote their first year to courses of Chemistry, Physics and Geology, none of which were *necessary* in the case of the students who passed in under the old régime.

Under that régime, at first, French and German were obligatory subjects in turn, and latterly French was made obligatory and German entirely dropped. This was, of course, a mistake, as one language is as important to a Forest Officer as is the other; but now the pendulum has swung to the side of German to the neglect of French, and is not this just as bad as the total neglect of German?

A two years' course at Coopers Hill was considered to be too short, but is much time gained by increasing it to three years, if at the same time three extra subjects are added, and Botany has to be taught from the very commencement?

From the first, forest students have been required to attend the College lectures in Geology and Physics, but this was quite unnecessary in view of the character of the examination which the successful competitor had already gone through

The ordinary college course of Chemistry is very much longer, and takes up very much more time than either Physics or Geology, and if the forest students are to follow this course, and learn as well organic chemistry, which does not form a part of the ordinary college curriculum, the time at their disposal for the other subjects which they are to learn willbe necessarily considerably shortened.

In order that full advantage may be taken of the extra year at Coopers Hill, an elementary knowledge of lower mathematics is necessary, and an elementary knowledge of Latin, and possibly Greek, will be found useful, in so far as they enable the student te analyse the exact meaning of the numerous scientific terms which will be met with in the study of the different branches of natural science. These subjects, as well as a good knowledge of elements of Physics, Chemistry and Geology, should be obtained at a public school before entering the College, and then the third year can be utilized in teaching those subjects which particularly and peculiarly belong to the training of a forest officer. Given two men of equal ability, it stands to reason that a man who has a knowledge of and presumably a liking for the natural sciences, such an Botany, Chemistry and Physics, would be undeniably preferable and better qualified as a forest officer than one who has simply passed into the department on his knowledge of Higher Mathematics, Latin or Greek. One would like to see the syllabus of the entrance examination altered, so as to bring it more in accordance with the old régime; so that Class I—*obligatory*—should contain Elementary Mathematics, English Composition, German, French, and the elements of Chemistry, Physics and Geology; that Class II should be done away with, and that Class III—*voluntary*—should embrace Botany, and, as at present, Freehand and Geometical Drawing

Botany, with especial reference to forestry, is very thoroughly taught at Coopers Hill, and the course is especially adapted to the requirements of a forest officer in a way which cannot be done at other institutions where general botany is taught, and it is considered desirable that this subject should be taught from the very beginning at the College.

C. G. R.

Punishments for Cattle trespass.

In a Note on Forest Policy in Bombay, published last month in the *Forester*, the Inspector General of Forests expresses his views on the procedure adopted in the matter of cattle trespass. The question is of importance and justifies discussion. Mr. Ribbentrop is averse to the award of a double punishment under the same law; he would rather (1) increase the pound fees, (2) withdraw the grazing concession, or (3) increase the grazing fees charged. The award of double punishment under the same law is, doubtless, in the abstract, repugnant to a sense of justice, but there is no novelty in the proceeding, nor do those who are so punished resent the punishment from this point of view. In the case of field trespass by swine, these animals may, I believe, be impounded, *and* the owner prosecuted for permitting the trespass. Simple impounding is thus not deemed to be sufficiently deterrent where much damage may be caused to the crops.

Forest trespass is more difficult to prevent than field trespass, and it is not apparent why one and the same procedure should be deemed unjust when applied to forests, and suitable when applied to arable lands. Personally, I am of opinion that the so-called double punishment is ideal, as the Magistrate in sentencing a trespasser would invariably take into consideration the amount already paid for releasing his cattle from the pound. To consider the alternatives proposed: first, to increase the pound fees; this would prevent a discrimination between the casual and habitual offender, and would level up all offences, whether committed by carelessness or by intention. It would also intensify the results of vexatious impounding, a so common outcome of personal animus in this country.

Secondly, the withdrawal of the privilege of grazing at reduced rates; and, *thirdly*, the increase of the normal grazing fees. These two proposals may well be considered together, in each, the community might be punished for the faults of individuals, in each, the action taken would not be deterrent unless the increased payment more than covered the value of *systematic* illicit grazing. It goes without saying that a village community thus punished would not, in the basis of this discussion, be otherwise proceeded against for continued trespass. The total prohibition of grazing to a village is too drastic a measure, it involves the existence of the agriculturalist; the increase in grazing dues tends in the same direction, and might, in a community, arrive near the same result before it was effective in individual cases.*

* For instance the habitual offenders in a community might be of the cattle breeding castes, with no interest in agriculture. The agriculturalists might be unable to prevent the trespass, and yet be made to suffer severely by the imposition of increased grazing dues.

I venture to bring forward a fourth proposal which would obviate the difficulty of the double punishment, and yet permit the Forest Officer to discriminate between degrees of offences and the Magistrate to award punishment proportionate thereto. This proposal is to abolish pound fees for forest pounds, but to continue to use these institutions as a sure and, at present, the only means at our disposal for the identification of trespassers. The Forest Officer must be in a position to deal with the habitual offender (whose sentence may be, and often is, three months' rigorous imprisonment and Rs. 100 fine) and the careless herd who is released on payment of pound fees, or compounds his offence by disbursing a trival sum. The registers of the law courts afford the proofs of habitual misdeeds; to punish solely by impounding would be to do away with this information, and so prescribe one punishment for offences which vary in degree.

Little need be said as to the working details of the proposal. The up-keep of forest pounds would involve an expense which the finances of the Department could well bear. The pound keeper would be an official of local knowledge not liable to be deceived by fictitious names and addresses The receipt of the owner of the cattle on removal would be taken as evidence of ownership, and the Magistrate before whom the case would be decided, would know how to deal with any complications which might arise under the new system of the abolition of pound fees.

O. C.

Modification of French Forest Law as regards the power to give light sentences in the case of forest offences.

A proposition has been presented to the French Chamber of Deputies, with the object of bringing about a modification of Section 203 of the French Forest Code, which at present prohibits the application of the attenuating circumstances of Section 463 of the Penal Code to forest offences.

The proposers of the modification maintain that there is no reason why the Forest Law should be the only law which leaves no power of appreciation with the Courts. A judge who convicts under the present law, is obliged to award a certain sentence which, in many cases, is out of all proportion to the offence committed; the only alternative he has to awarding an unduly severe sentence is to acquit, which is obviously equally undesirable. To take an example. In the case of cattle trespass, Section 199 fixes the fine at so much a head; no discrimination is allowed as to whether

the damage caused was grave or trivial, whether the trespass was an accident or owing to ignorance, or was of deliberate intent. The offence exists by the simple fact of the trespass, and there is no question of anything else.

Again, when damages are recoverable from an offender, they cannot, by Section 202 of the Forest Code, be less than the fine awarded, whatever may be the extent of damage; and it is obvious that in many cases to award the minimum damages fixed by the Code would be equally unjust as to refuse to award damages at all, between which limits there is no middle course.

The arguments in favour of the present order of things appear to be based chiefly on two considerations. First that a rigorous law is indispensible for the proper conservation of the forests As to this, it seems more than probable that its very rigor is the cause in many cases of its inefficacy, as, for instance, in such cases as those in which the Court has to choose between an acquittal and a sentence to a punishment out of all proportion to the offence. Secondly, it is alleged that the Forest Administration is invested with the right of compounding forest offences, and that it is thus able to modify, when necessary, the severity of the forest law. That forest officers should be authorized to compound offences is, of course, quite right and proper, but the exercise of the authority depends, after all, on the individual; and without denying that a conciliatory spirit is generally displayed by officers of the department, yet the proportion of cases compounded naturally varies with the officer competent to accept composition. The proposers of the modification in question maintain that even supposing forest officers were never influenced by any other considerations but those of justice in accepting or refusing composition, yet the power to admit of attenuating circumstances is none the less necessary for the Courts. The power to accept composition exists also under other laws, but has not in any other case prevented the admission of attenuating circumstances by the Courts.

The following article appears in *Le Bois* on this subject :—

"It would be easy to reply that the Forest Code was drawn 'up with a perfect understanding at all points in order to protect 'efficaciously forest property, and more especially that of the State 'and the Communes in the interests of the country at large, that 'it was necessary to adopt severe measures to repress old-standing 'and numerous abuses; but that as the conditions became simpler, 'the rigour of the law has been considerably moderated without 'actually altering the text, that notably the system of compound-'ing offences so largely made use of in the Forest Administration 'has long since procured all the leniency which is compatible with 'the up-keep of the forests. In our time, however, the general 'good of the country at one time so deep and lively a sentiment, 'has now given place to electoral interests, it is therefore extremely 'probable that the Chamber will receive favourably the project 'which has been submitted to it.—(*From the Revue des Eaux et 'Forêts.*")

II.—CORRESPONDENCE.

Value of 'Pynkado' for Sleepers and Paving Blocks.

SIR,

As there has been some correspondence in the papers lately on the subject of the value of *Xylia dolabriformis* for railway sleepers and for wood-paving purposes, the following extracts from home reports of the value of the wood in the London market will be interesting :—

"We have examined your plank of wood per *Arapalu*, and find same to be a very hard wood, close grained and with a 'strong tendency to split on the flat side, it does not appear to 'possess any special merit, and we do not think shipments would 'realise enough to cover freight and charges, and we certainly can-'not recommend you to make any consignments."

Another report says :—

"We have not yet found anyone to take an interest in the 'Jamba. It is so hard that the expense of cutting into blocks would 'be excessive, and the railway Companies here will not use it for 'sleepers, as it makes the trains too noisy, they insist on having 'pine-wood, which being more springy is quieter."

The North Kanara forests in the Bombay Presidency could supply 1 to 2,000 tons of this timber annually at Rs. 40 per ton delivered at the railway-stations of Alnawur or Londa, Southern Mahratta Railway.

W. A. TALBOT,
D. F. O., N. Dn., Kanara, Bombay.

Albizzia lophantha at the Cape.

SIR,

In a recent number of the *Indian Forester* I notice your remarks about *Albizzia* or *Acacia lophantha*. My opinion of it quite coincides with yours : and I am at a loss to understand why the Punjab Forest Department should seek to propagate it. In the Cape Peninsula it is a naturalized weed, in the sense that it over-runs fertile ground, but will not grow in dry or poor localities. On the fertile slopes of Table Mountain it grows in many places like

Acacia dealbata on the Nilgiris. In dry localities on the mainland, where other wattles, notably *Acacia Cyclopis* (?) flourish, *A. lophantha* is never seen. Its bark is worthless for tanning purposes. It is notorious in Cape gardens as being the chief home of that pest of all pests, the Australian bug, *Icerya Purchasi*. There are 2 species of wattle that, judging from S. African experience, are most likely to succeed in the Punjab, *Acacia Cyclopis* and *A. saligna*. Both are quite naturalized in S. Africa. We collect tons of the seed yearly for re-foresting, chiefly for the barren sands of the Cape flats. The *saligna* wattle furnishes a good tanning bark, largely used in local tanneries. The *Cyclopis* wattle is of no value for tanning purposes, but does well on barren hillsides and on limestone ; it is now found all along the coast of S. Africa, especially at Port Elizabeth and Mossel Bay.

The valuable black wattle, *A. decurrens*, has no doubt been well tried on the Himalayas. As a curiosity I send you South African seed of this and of the other very valuable tan wattle, *A. pycnantha*.

CAPETOWN, *August 28th*, 1894.

D. E. HUTCHINS, *Cons. Forests.*

III.—OFFICIAL PAPERS & INTELLIGENCE.

Resolution on the Forest Policy of the Government of India.

In Chapter VIII of his Report on the improvement of Indian Agriculture, Dr. Völcker dwells at length upon the importance of so directing the policy of the Forest Department that it shall serve agricultural interests more directly than at present ; and in his Review of Forest Administration for 1892-93, the Inspector-General of Forests discusses in some detail the principles which should underly the management of State forests in British India. While agreeing generally with the principles thus enunciated by the Inspector-General of Forests, the Government of India think that it will be convenient to state here the general policy which they desire should be followed in this matter; more especially as they are of opinion that an imperfect apprehension of that policy has, in some recent instances, been manifested.

2. The sole object with which State forests are administered is the public benefit. In some cases the public to be benefitted are the whole body of tax-payers; in others, the people of the tract within which the forest is situated; but in almost all cases the constitution and preservation of a forest involve, in greater or less degree, the regulation of rights and the restriction of privileges of user in the forest area which may have previously been enjoyed by the inhabitants of its immediate neighbourhood This regulation and restriction are justified only when the advantage to be gained by the public is great; and the cardinal principle to be observed is that the rights and privileges of individuals must be limited, otherwise than for their own benefit, only in such degree as is absolutely necessary to secure that advantage.

3. The forests of India, being State property, may be broadly classed under the following heading:—

(*a*) Forests, the preservation of which is essential on climatic or physical grounds.

(*b*) Forests which afford a supply of valuable timbers for commercial purposes.

(*c*) Minor forests.

(*d*) Pasture lands.

It is not intended that any attempt should be made to class existing State forests under one or other of these four heads. Some forests may occupy intermediate positions, and parts of one and the same forest may fall under different heads. The classification is useful only as affording a basis for the indication of the broad policy which should govern the treatment of each class respectively; and in applying the general policy, the fullest consideration must be given to local circumstances.

4. The first class of forests are generally situated on hill slopes, where the preservation of such vegetation as exists, or the encouragement of further growth, is essential to the protection from the devastating action of hill torrents of the cultivated plains that lie below them. Here the interests to be protected are important beyond all comparison with the interests which it may be necessary to restrict; and, so long as there is a reasonable hope of the restriction being effectual, the lesser interests must not be allowed to stand in the way.

5. The second class of State forests include the great tracts from which our supply of the more valuable timbers—teak, sál, deodar, and the like—is obtained. They are for the most part (though not always) essentially forest tracts, and encumbered by very limited rights of user; and when this is the case, they should be managed mainly on commercial lines as valuable properties of, and sources of revenue to, the State. Even in these cases, however, customs of user will for the most part have sprung up on the margins of the forest; this user is often essential to the prosperity of the people who have enjoyed it; and the fact that its extent is limited in comparison with

the area under forest renders it the more easy to continue it in full. The needs of communities dwelling on the margins of forest tracts consist mainly in small timber for building, wood for fuel, leaves for manure and for fodder, thorns for fencing, grass and grazing for their cattle, and edible forest products for their own consumption. Every reasonable facility should be afforded to the people concerned for the full and easy satisfaction of these needs, if not free (as may be possible where a system of regular cuttings has been established), then at low and not at competitive rates. It should be distinctly understood that considerations of forest income are to be subordinated to that satisfaction

There is reason to believe that the area which is suitable to the growth of valuable timber has been overestimated, and that some of the tracts which have been reserved for this purpose might have been managed with greater profit both to the public and to the State, if the efforts of the Forest Department had been directed to supply the large demand of the agricultural and general population for small timber, rather than the limited demand of merchants for large timber. Even in tracts of which the conditions are suited to the growth of large timber, it should be carefully considered in each case whether it would not be better, both in the interests of the people and of the revenue, to work them with the object of supplying the requirements of the general, and in particular of the agricultural, population.

6. It should also be remembered that, subject to certain conditions to be referred to presently, the claims of cultivation are stronger than the claims of forest preservation. The pressure of the population upon the soil is one of the greatest difficulties that India has to face, and that application of the soil must generally be preferred which will support the largest numbers in proportion to the area. Accordingly, wherever an effective demand for culturable land exists, and can only be supplied from forest areas, the land should ordinarily be relinquished without hesitation; and if this principle applies to the valuable class of forests under consideration, it applies *à fortiori* to the less valuable classes which are presently to be discussed. When cultivation has been established, it will generally be advisable to disforest the newly-settled area. But it should be distinctly understood that there is nothing in the Forest Act, or in any rules or orders now in force, which limits the discretion of local Governments, without previous reference to the Government of India (though, of course, always subject to the control of the Government) in diverting forest land to agricultural purposes, even though that land may have been declared reserved forest under the Act

7. Mention has been made of certain conditions to which the application of the principle laid down in the preceding paragraph should be subject. They have for their object the utilization of the forest area to the greatest good of the community. In the firs

place, the honey-combing of valuable forests by patches of cultivation should not be allowed ; as the only object it can serve is to substitute somewhat better land in patches for sufficiently good land in large blocks, while it renders the proper preservation of the remaining forest area almost impossible. The evil here is greater than the good. In the second place, the cultivation must be permanent. Where the physical conditions are such that the removal of the protection afforded by forest growth must result, after a longer or shorter period, in the sterilization or destruction of the soil, the case falls under the principle discussed in paragraph 4 of this Resolution. So again, a system of shifting cultivation, which denudes a large area of forest growth in order to place a small area under crops, costs more to the community than it is worth, and can only be permitted, under due regulation, where forest tribes depend on it for their sustenance. In the third place, the cultivation in question must not be merely nominal, and an excuse for the creation of pastoral or semi-pastoral villages, which do more harm to the forest than the good they reap from it. And in the fourth place, cultivation must not be allowed so to encroach upon the minimum area of forest which is needed in order to supply the general forest needs of the country, or the reasonable forest requirements, present and prospective, of the neighbourhood in which it is situated. In many tracts cultivation is practically impossible without the assistance of forests, and it must not be allowed to destroy that upon which its existence depends.

8. It has been stated above that the forests under consideration are generally, but not always, free from customs of user. When, as sometimes happens, they are so intermingled with permanent villages and cultivation that customary rights and privileges militate against their management as revenue paying properties, the principles laid down at the end of paragraph 5 of this Resolution should be observed, and considerations of income should be made secondary to the full satisfaction of local needs. Such restrictions as may be necessary for the preservation of the forest, or for the better enjoyment of its benefits, should be imposed ; but no restriction should be placed upon reasonable local demands, merely in order to increase the State revenues.

9. The third class of forests include those tracts which, though true forests, produce only the inferior sorts of timber or the small growths of the better sorts. In some cases the supply of fuel for manufactures, railways, and like purposes, is of such importance that these forests fall more properly under the second class, and must be mainly managed as commercial undertakings. But the forests now to be considered are those which are useful chiefly as supplying fuel and fodder or grazing for local consumption; and these must be managed mainly in the interests of the population of the tract which supplies its forest requirements from this source. The first object to be aimed at is to preserve the wood

and grass from destruction ; for user must not be exercised so as to annihilate its subject, and the people must be protected against their own improvidence. The second object should be to supply the produce of the forests to the greatest advantage and convenience of the people. To these two objects all considerations of revenue should ordinarily be subordinated

10. It must not be supposed from the preceding remarks that it is the intention of the Government of India to forego all revenue from the large areas that are valuable chiefly for the fuel and fodder which they yield. Cases must be distinguished. Where the areas in question afford the only grazing and the only supply of fuel to villages which lie around or within them, the necessities of the inhabitants of these villages must be treated as paramount, and they should be satisfied at the most moderate rates, and with as little direct official interference as possible. But where the villages of the tract have already ample pasture grounds attached to their cultivation and owned and managed by themselves, and where the Crown lands merely supplement these pastures and afford grazing to a nomad pastoral population, or to the herds that shift from one portion of the country to another with the changes of the season, Government may justly expect to reap a fair income from its property. Even in such cases, however, the convenience and advantage of the graziers should be studiously considered, and the inhabitants of the locality, or those who habitually graze over it, should have a preferential claim at rates materially lower than might be obtained in the open market. It will often be advantageous to fix the grazing demand upon a village or a nomad community for a year or a term of years. The system, like every other, has difficulties that are peculiar to it ; but it reduces the interference of petty officials to the lowest point, and minimizes their opportunities for extortion and oppression. Where grazing fees are levied *per capita*, free passes are often given to a certain number of cattle. In such cases the cattle which are to graze free should include, not only the oxen which are actually employed on the plough, but also a reasonable number of milch cattle and calves. A cow or a buffalo is as much a necessity to a cultivator, using the word necessity in a reasonably wide sense, as is a plough-bullock ; and in many parts, the oxen are bred in the village.

11. In the portions of his report which are referred to in the preamble to this Resolution Dr. Volcker strongly recommends the formation of fuel and fodder preserves, and the Government of India has repeatedly urged the same policy upon local Governments. The question whether any particular area can be made to support a greater number of cattle by preserving the grass and cutting it for fodder, or by permitting grazing upon it, is one that must be decided by the local circumstances of each case. But when it has been decided, the issues are by no means exhausted It has been stated in paragraph 9 above that one main object

towards which the management of these minor forests should be directed is, the supply of fuel and fodder "to the greatest advantage and convenience of the people." In doing so, due regard must be had to their habits and wishes. It may be that strict preservation and periodical closures, or the total prohibition of grazing, will result in the largest yield both of fuel and of fodder in the form of hay. But that is of small avail if the people will not utilize the increased supply in the form in which it is offered them The customs of generations alter slowly in India; and though much may and should be done to lead the people to their own profit, yet it must be done gently and gradually, always remembering that their contentment is no less important an object than is their material advantage. It must be remembered, moreover, that the object of excluding grazing from the preserves in question is the advantage of the *neighbourhood*; and that the realization of a larger income than grazing would yield, by preserving the produce, only to sell it to the highest bidder for consumption in large towns at a distance from the preserve, is *not* always in accordance with the policy which the Government of India has inculcated. Here again circumstances must decide. It may be that the local supply of fuel or fodder, independently of the reserved area, is sufficient in ordinary years for the needs of the neighbourhood. In such a case the produce may legitimately be disposed of in such years to the greatest advantage, reserving it for local consumption only when the external supply runs short. Finally, the remarks regarding agency in paragraph 12, and the more general considerations that are discussed below in paragraph 13 of this Resolution, apply in full force to areas thus reserved for the supply of fuel and fodder.

12 The fourth class of forests referred to are pastures and grazing grounds proper, which are usually forests only in name. It is often convenient, indeed, to declare them forests under the Act, in order to obtain a statutory settlement of the rights which the State on the one hand, and private individuals or communities on the other, possess over them. But it by no means follows as a matter of course that these lands should be subjected to any strict system of conservation, or that they should be placed under the management of the Forest Department. The question of agency is purely one of economy and expediency; and the Government of India believe that in some cases where these lands are managed by the Forest Department, the expenditure on establishment exceeds the revenue that is, or at any rate the revenue that ought to be, realized from them.

The following remarks apply, not only to forest lands under the Act, whether administered by the Forest Department or not, but also to all Crown waste, even though not declared to be forest. Here the interests of the local community reach their maximum, while those of the general public are of the slightest nature. It

follows that the principles which have been already laid down for the management of minor forests apply, if possible, with even greater force to the management of grazing areas pure and simple.

13 The difficulties which arise in connection with these areas are apt to present themselves in their most aggravated form where the tenure of land is ryotwari. In zemindari tracts the Crown lands generally assume the second of the two forms indicated in paragraph 10 of this Resolution. But where the settlement is ryotwari, every survey number or field that is unoccupied or unassigned is in the possession and at the disposal of Government, and trespass upon it is *primâ facie* forbidden. In some cultivated tracts, these unoccupied and waste lands are the only source available from which the grazing requirements of the resident population can be met. The Government of India are clearly of opinion that the intermixture of plots of Government land which are used for grazing only, but upon which trespass is forbidden, with the cultivation of occupancy or proprietary holders, is apt to lead to extreme abuses, and especially so when these plots are under the management of the Forest Department The inferior subordinates of the Forest Department are perhaps as reliable as can be expected on the pay which we can afford to give ; but their morality is no higher than that of the uneducated classes from which they are drawn ; while the enormous areas over which they are scattered and the small number of the controlling staff render effective supervision most difficult. It is not right, in order to protect the grass or the grazing dues on plots of waste scattered over the face of a cultivated district, to put it into the power of an underling to pound or threaten to pound cattle on the plea that they have overstepped the boundary between their owner's field and the next. Still less right is it to permit the exercise of the power of compounding offences allowed by section 67 of the Forest Act, to depend upon the mere report of a subordinate servant, or to expose him to the temptations which such a power holds out. Where the interests involved are sufficiently important, it may perhaps be necessary to accept the danger of extortion while minimizing as far as possible the opportunities for it. But in the case under consideration the interests involved are trifling, while the opportunities are unlimited.

14. It is to be distinctly understood that the Government of India do not desire that grazing should be looked upon primarily as a source of income. But it by no means follows that all revenues from scattered Government lands should be relinquished. It is, indeed, inadvisable that this should be done, as to do so would give the raiyats an interest in opposing allotment and making things unpleasant for new occupants. But the objections to direct management which have just been pointed out are reduced to a minimum or altogether avoided, when the management is placed in hands of the resident cultivators or of representatives

from among them. It will generally be possible to lease or otherwise manage the unoccupied lands of a village through the agency of the community; not, indeed, at the highest price which they are ready to pay to escape such evils as have just been alluded to, but at a moderate estimate of their value to them, fixed in view of the fact that herds and flocks, which cannot exist without grazing, are often a necessary condition of the successful conduct of that cultivation upon which the Government land-revenue is paid. In no case should fields that have been relinquished be let to outsiders at a reduced assessment for grazing purposes, for then we might have speculators taking up such fields, mainly in order to make what they can out of trespassing cattle.

15. One more point of principle remains to be noticed. The procedure under Chapter IV of the Indian Forest Act, whereby forests are declared to be protected, has been in certain cases regarded by the Government of India as a provisional and intermediate procedure, designed to afford time for consideration and decision, with the object of ultimately constituting so much of the area as it is intended to retain, a reserved forest under Chapter II, and of relinquishing the remainder altogether. The Act provides two distinct procedures. By the more strict one, under Chapter II, existing rights may be either settled, transferred or commuted; and this procedure will ordinarily be applied to forests of the first and second classes indicated in paragraph 3 of this Resolution. By the second procedure under Chapter IV rights are recorded and regulated; and this procedure will often be properly followed where the rights to which the area is subject are extensive, and forest is to be managed mainly in the interests of the local community. It will ordinarily be applied to forests of the 3rd and 4th classes. This second procedure may indeed be provisional, and introductory to reservation under Chapter II; but there is in the Forest Act nothing repugnant to giving it a larger and even a permanent operation. As regards Government, the chief difference between the two procedures is, that new rights may spring up in a protected, but not in a reserved forest, and that the record-of-rights framed under Chapter II is conclusive, while that framed under Chapter IV only carries a presumption of truth. It is believed that this presumption offers ample security where the object of regulating the rights is to provide for their more beneficial exercise, rather than to override them in the public interest. As regards the people, the chief difference is that, speaking broadly, in a reserved forest everything is an offence that is not permitted, while in a protected forest nothing is an offence that is not prohibited. In theory it is possible so to frame the permission and the prohibition as to make the results identical in the two cases; but in practice it is almost impossible to do so. If it were not so, the distinction drawn by the legislature would be unnecessary and meaningless. It is only where

the public interests involved are of sufficient importance to justify the stricter procedure and the more comprehensive definition of forest offences, that the latter should be adopted

The Governor-General in Council desires, therefore, that with regard both to fuel and fodder preserves, and to grazing areas pure and simple, and especially to such of them as lie in the midst of cultivated tracts, it may be considered in each case whether it is necessary to class them, or, if already so classed, to retain them as forest areas ; and if this question is decided in the affirmative, whether it would be better to constitute them protected rather than reserved forests

19. Such are the general principles which the Government of India desire should be observed in the administration of all State forests in British India. They are fully aware that the detailed application of these principles must depend upon an infinite variety of circumstances which will have to be duly weighed in each case by the local authorities, to whose discretion the decision must be left. One of the dangers which it is most difficult to guard against is the fraudulent abuse of concessions for commercial purposes ; and only local considerations can indicate how this can best be met. The Government of India recognize the fact that the easier treatment in the matter of forest produce which his Excellency in Council desires should be extended to the agricultural classes may, especially in case of true forest areas, necessitate more careful supervision in order that the concession may be confined within its legitimate limits. But, on the other hand, they think that, in some Provinces, it will render possible a considerable reduction of existing establishment ; and they desire that this matter be carefully considered with reference to what has been said above in paragraph 12. They know also that in some Provinces forest policy is already framed on the lines which they wish to see followed in all. But the Governor-General in Council believes that local Governments and Administrations will be glad to receive the assurance now given them, that the Supreme Government will cordially support them in recognizing and providing for local requirements to the utmost point that is consistent with Imperial interests. Where working-plans or plans of operation are framed for forests, the provisions necessary for this purpose should be embodied in them. The exercise of the rights that have been recorded at settlements will necessarily be provided for in these plans. Where further concessions are made by way of privilege and grace, it will be well to grant them for some such limited period as ten years, so that they may, if necessary, be revised from time to time, as the circumstances on which they were moulded change.—(*Gazette of India.*)

(We have printed this long Resolution in full as we believe many of our subscribers, especially those in Europe, may wish to see it Any remarks we may have to make are deferred to a later number.—(HON. ED.)

IV.—REVIEWS.

Annual Forest Administration Report for 1892-93 for Bengal, the Punjab and Coorg.

The BENGAL Report is an interesting one for those who are personally acquainted with the forests, but there is not much in its record of hard work, which can be specially referred to or quoted as of special interest. After reading such statements as that of the Director of Agriculture in the Central Provinces, referred to in our last month's number, it is very satisfactory to note the good relations which exist in Bengal between Revenue and Forest officers. The Conservator says :—

"There was an absolute absence of friction between Divisional 'and District officers, and between this department and other 'departments. In every instance do the District officers appear to 'have looked upon the forest administration of the country as a 'part of their own duty, and to have afforded their professional 'forest assistants all the aid in their power. This interest taken 'in forest questions by the District officers, and their appreciation 'of the relative degree of responsibility attaching to themselves 'and their forest assistants in the efficient management of the 'State forests, is one of the pleasantest features of forest adminis-'tration in Bengal."

Of course, it was only what was to be expected, for an interest in the Department on the part of Lieutenant-Governors and Revenue officers of all grades is traditional in Bengal; though, perhaps, something may also be set down to the fact that most of the forest areas are in out-of-the-way localities, and not mixed up with the agricultural country as they are in parts of Central, Southern and Western India. The main districts of Bengal and Behar are, of course, under the Permanent Settlement, and consequently the Department has nothing to do with them. As usual, the most interesting matter to our readers are to be found in the portion of the Report which deals with reproduction. The remarks on reproduction in the Sundarbans have been thought worthy of quotation in the Local Government Review, and we give them also :—

"In the Sundarbans forests conditions are so favourable to 'vegetation that we note without wonder the account which the 'Divisional Officer gives of a new island, three miles long, that

'appeared above the waters of the Pancassia river in 1891, having 'by this time covered over to a great extent with bushes fifteen 'feet high of Keora (*Sonneratia apetala*), Ora (*Sonneratia acida*), 'Bain (*Avicennia officinalis*), a few seedings of Golpatta (*Nipa 'fruticans*), and quantities of wild rice (*Oryza sativa*).

'Reproduction of tree growth in the Sundarbans forests is, 'indeed, a curious sight to see. Seedlings of Gengwa (*Excœcaria 'Agallocha*) may be perceived on the shelving banks of the rivers 'coming up as thickly as the best crops of paddy. The majority 'of the species shed their seed during the rains, and this seed is 'then floated by the tides—which attain their highest level at that 'season of the year—in immense quantities (and often in a state 'of germination as they float along) well into the interior of the 'innumerable islets which go to form this singular region."

and the Conservator's remarks upon Angúl are also most interesting, for these beautiful sal forests of Orissa are, like those of Ganjam further south, quite different in character to much of what is found in the Sub-Himalayan region :—

"The splendid sal reproduction to be seen in those beautiful 'forests of Angúl that stretch along the Mahanadi river surprised 'the Inspector-General of Forests himself, and it is a pity that the 'absence of a market for the excessive proportion of inferior 'species found in these forests should not enable us to foster, as 'we would wish, the evident bent of the sal in this locality to 'extend itself over the whole of the Tikarpara-Bagmunda Range. 'We should like to cut away or girdle the trees that oppose their 'heavy cover to the spread of the more valuable sal, but the small 'demand for the produce and the danger of accumulating inflam-'mable rubbish on the ground give us but small latitude in the 'matter."

The Conservator, Mr. Dansey, complains feelingly of the difficulties he has to contend with in a huge Circle with an insufficient staff, and he instances the fact that the Chittagong Division changed hands no less than seven times during the 15 months, and three times directly afterwards, making 10 changes in 18 months.

The financial results of the year were :—

	Forest year, 15 months.	Financial year.
Receipts ...	9,04,803	7,44,882
Charges ...	4,74,586	3,81,608
Surplus ...	4,30,217	3,63,274

both *gross* and *net* revenue being only a little less than in the previous year.

The PUNJAB Report has been a melancholy one to read. All through it shows the characteristic opinions and style of its writer, Mr. R. H. C. Whittall, whose sudden death the Government of

India have referred to with regret It is besides, as the Government of India have also remarked, an interesting Report, clearly showing the state of affairs as regards forest conservancy in the Punjab at the present time.

The area of forest, at the end of the year, contained the following :—

			sq. miles.
Reserved	(1)	Departmental ...	1,634
	(2)	Military ..	42
	(3)	District ...	70
Protected	(1)	Departmental ...	67
	(2)	District ...	131
Unclassed		.. ... .	5,670
		Total ..	7,614

there having been a slight decrease during the year owing to the giving up of areas for cultivation along the Chenab canal line The Report gives a formidable list of areas for which Working Plans are needed, and most especially instances Kulu and Kaghan as being British tracts and requiring the present employment of capital more than their neighbours, the Leased Forests. In regard to the Working Plans for the 'rakh' lands of Multan and Montgomery the Conservator says :—

"Next in order of importance come the areas which feed the 'North-Western Railway with fuel ; these are in Montgomery, 240 'square miles, and in Multan about 70 The Reserved forests are 'not of sufficient extent to maintain the supply, and Government 'have hitherto shown themselves unwilling to extend reservation. 'So that if Working Plans are made they must embrace tracts of 'unclassed forests where the rights are unknown and unrecorded, 'and where the grazing restrictions are not likely to fulfil forest 'requirements.

'In these rakhs no very scientific forestry is required. Local 'Dehra-trained Rangers can, under proper check, do the field 'work ; the only difficulty is the grazing and the fitting of it in 'with the cuttings, and I fear that unless the grazing restrictions 'during the time young forest is growing up are made more rigid, 'it will be impossible to include areas of unclassed forest in the 'Working Plans. The subject is receiving local attention. 'In Multan many forests have been described compartment by 'compartment, the rotation decided upon, and the sequence of 'fellings, while we hope that an increase to the reserved area may 'be permitted. In Montgomery, the area necessary to supply the 'railway, about 240 square miles, has been roughly mapped, 'divided into large blocks and estimated, and the question is being 'considered whether the restrictions to grazing granted by Sir 'James Lyall in 1889 over the unclassed portion of about a lakh

'of acres will permit of a regular programme of working being 'adopted."

In regard to the natural reproduction the report has much of interest in respect to the sylviculture of deodar, blue pine, spruce and silver fir, so we need not offer apologies for making a lengthy extract :—

"HAZARA.—Mr. Gisborne Smith reports that natural repro-'duction of silver fir is not so deficient as has generally been 'supposed. It is worst on the higher and moister slopes where 'dense undergrowth prevails. In a few selected places, a certain 'amount of grazing, under strict regulation has been permitted, as 'the cheapest way of keeping down this undergrowth. In Kaghan 'natural reproduction of deodar is good, especially where light 'grazing takes place.

'RAWALPINDI.—The absence of fires for now three successive 'years has had a most marked effect on the vegetation in the 'Murree and Kahuta hills. And Mr. Forrest also states that the 'damage from grazing is not so great as is generally supposed, 'because in these hills the grazing is, as yet, light.

'CHAMBA.—All that Mr. MacIntire has to say on this subject 'is always interesting, and I agree with him that light grazing to 'keep down the rank herbaceous growth, which is the greatest 'enemy the young deodar seedling has, is not only permissible but 'necessary. Grazing of kine on steep hill slopes can never be 'heavy as it is in the plains where animals herd together ; and 'when the numbers and the seasons of admittance can be regulat-'ed, grazing may often be permitted, in the hills only, where we 'have been in the habit of rigorously excluding it. It was noticed 'that the ground near seed-bearers, the seed being plentiful, was 'often more covered with seedlings when the soil had not been 'wounded or terraced than where these works had been under-'taken. This seems to point to the abandonment of the idea of 'preparing the soil for the reception of naturally deposited seed. 'I quote the following from the Divisional Report as well worthy 'of attention.

"But no practical plan of saving such seedlings from destruc-'tion, such as has overtaken nearly all germinating in previous 'years, has been thought out. It has been noticed that shade does 'not seem to hinder the germination of such seedlings whatever 'its results may be as they grow older. And as most, or nearly all, 'of the seedlings are well rooted in the soil, it is difficult to believe 'they die out mainly because they germinate among dead leaves 'and vegetable humus, which are usually far from covering up the 'soil to any considerable depth Also, as the death-rate from 'drought in deodar nurseries sown in exposed places is generally 'small, it cannot be supposed that drought is the principal obstacle 'to their establishment. There seems to be no way out of suppos-'ing that the principal reason why so few deodar seedlings establish

'themselves is that in most situations they are at first incapable 'of fighting other forms of vegetation which are produced'

'In the Kalatop Forest, the seedlings of spruce and silver fir 'on the contrary, at ordinary elevations seem capable of establish-'ing themselves amongst and growing through other vegetation.

'This is just what the silver fir in the Dungagaili Range of 'Hazara does not appear able to do.

'KANGRA.—In Kangra, natural reproduction has been materi-'ally improved in the Chil and bamboo forests by the removal of 'dense undergrowth, and in the bamboo forests by the exclusion 'of grazing during the three rainy months.

'KULU.—In Kulu, the deodar seeded profusely, and owing to 'favourable climatic reasons the show of natural seedlings is said 'to be magnificent, in places whole nurseries of self-sown deodar 'having been formed. The Divisional Officer still complains of 'the excessive grazing by sheep and goats.

'BASHAHR.—The report from Bashahr is also interesting and 'the rapid spread of the blue pine forming pure forest over 'formerly treeless tracts is remarked on at length Mr. Minniken 'also notices what has been frequently observed on previous 'occasions in Chamba, *viz.*, that where the deodar in a mixed 'forest is rare, there is little hope of perpetuating it. This is 'especially the case in cold and moist situations where rank vege-'tation prevails, and is the reason why we are very cautiously 'admitting a little grazing in such places Pure forests of blue 'pine also are peculiarly liable to injury and even destruction by 'insect pests, and the artificial intermixture of deodar with this 'pine would be a very good measure."

In our May number, at page 178, we inserted a note asking for information about what became of the quantities of seed of *Albizzia lophantha* which have been obtained from Australia for the Punjab Forest Department. The following extract practically gives the answer to our enquiries, and we hope it will shew Baron von Mueller that the seed has not been wasted :—

"By far the most interesting and perhaps the most important 'experiment is that with the European *Robinia Pseudo-Acacia* and 'Australian *Albizzia lophantha*. I have previously explained that 'I did not particularly care to spend much money or trouble on 'the introduction of these species in the higher hills, although they 'are being supplied to those places in small quantities. But I am 'very desirous of finding some species which will assist us in 'stocking up our forests in the low hills up to 4,000 feet. 'Previous experiments had been decidedly unsatisfactory in results, 'but I was convinced that the plants had, in most places where 'they had been tried, not received fair play.

'Proper trouble was not taken to cultivate them, and the 'nursery treatment was certainly neglected. In the situations I 'particularly desired success, nothing was done beyond sowing the

'seed in indifferently prepared nurseries and then abandoning it. 'For this year, however, I am glad to report a very decided im-'provement both in the interest and care taken, and in the result

'In the Pabbi I found last January a few plants still alive in 'the nursery in which they had been sown in the previous rains. 'they had never been re-bedded or cared for in the least, and 'consequently had very long tap roots. The weather being 'favourable I had them re-bedded at once before me, only 3 out 'of 400 *Robinias* and 20 out of 706 *Albizzias* succumbing under 'the operation. They made such progress in the new beds that at 'the end of February they again required re-bedding; unfortu-'nately my orders had again been neglected, they had been steadily 'watered when they did not require water, and were far too delicate 'for forest plants and their numbers fell to 340 and 500. These 'are now all alive and well; and, notwithstanding mistakes, I am 'convinced that the nursery treatment of the two species, especi-'ally of the *Robinia*, is perfectly easy. The *Robinia* grows much 'faster than the *Albizzia*, and in June 1893 had reached the 'dimensions I had fixed for its being transplanted out. They 'were put out in pits 15 feet apart, and have now made remark-'able progress in their final homes. All the 340 are alive and 'well. I consider these results very promising for the extension 'and success of the *Robinia* in the Pabbi."

The financial results of the year were as follows :—

	Forest year 12 months.	Financial year.
Receipts ...	8,20,988	8,12,632
Charges ...	6,52,044	6,56,265
Surplus ...	1,68,944	1,56,367

the results being very low. The Conservator remarks that the revenue will probably decrease, so that the surplus cannot be maintained in future; but in this the Government of India disagree.

The COORG Report has suffered in interest from the fact that the Deputy Conservator, Mr. G. H. Foster, died during April, 1893, and his successor did not join till after the close of the year. The chief subject discussed in it as well as in the Reviews by the Commissioner of Coorg and the Chief Commissioner is the improvement of fire protection works in which the late Mr. Foster took such an interest.

The financial results of the year were :—

	Forest year	Financial year.
Receipts ..	1,85,529	1,80,676
Charges ...	70,407	73,091
Surplus	1,15,122	1,07,585

Durability of Wooden Sleepers.

The last statement published by the Public Works Department shows the results of the experiments to test the durability of wooden railway sleepers up to the end of the year 1892.

On the Ajmere-Khandwa section of the Rajputana-Malwa Railway six miles of wooden sleepers were laid down in 1876. The results at the end of the year 1892, *viz.*, after 16 years, are as follows :—

Out of	2,054	Deodar	95	per cent.	are still	sound
,,	6,585	Creosoted Pine	33	,,	,,	,,
,,	1,986	Kahoo (Terminalia Arjuna)	32	,,	,,	,,
,,	83	Sal	33	,,	,,	,,
,,	902	Anjan	41	,,	,,	,,
,,	689	Teak	29	,,	,,	,,

On another section of this line, out of 13,042 creosoted pine sleepers laid down in 1880 only about 20 per cent are still sound, and out of 450 deodar on the same section only 29 per cent. On the Rewari-Ferozpore section, of 1,166 deodar laid down in 1882, 68 per cent. are still sound, whereas of a small number of creosoted pine, 84 per cent. were removed after four years.

Again, in another part of the same section, out of 11,943 deodar laid down in 1884 only 74 have so far been removed, but the time is rather short for this result to be of much value.

On the North-Western Railway, out of 1,416 deodar laid down in 1877, 79 per cent. are still sound, after 15 years, whereas of 1,144 creosoted pine of the same experiment none now remain, the average age of this kind of sleeper at the time of removal being 13 years.

The results obtained on this Railway are, however, a little variable, as in another portion 957 Deodar sleepers laid down in 1878 were all removed in 13 years, whereas the creosoted pine seems to have fared better, as out of 382 only 193 had to be removed after 14 years ; the number of the latter in this case, however, is rather too small to affect the general results of the experiments which still remain as heretofore in favour of deodar.

On the Southern Mahratta Railway out of a small number of teak and creosoted pine laid down in 1880, 93 per cent. of the former and 60 per cent. of the latter are still sound. In another part of the same line out of 1,020 teak and 589 pine (creosoted) 91 per cent and 55 per cent. respectively are still sound after 12 years.

On the Eastern Bengal Railway, in the experiment of 1877, out of 1,973 Sal, 59 per cent are still sound, whereas of 1,923 creosoted pine only 9 per cent. still remain.

In another portion of the same line, Sal shows 73 per cent. still sound out of 2,006 laid down in 1879.

The other experiments on this line extend over shorter periods, but it may be noted that 57 of the 1,823 iron-wood sleepers laid down in 1884 had to be removed during the year 1892.

A. F. G.

V—SHIKAR, &c.

Athletic Sports of the Imperial Forest School.

On Saturday last, the 13th of October, the annual sports of the Imperial Forest School came off on the Old Parade-ground. The Director of the School, Mr. J. S. Gamble, had, unfortunately, to go out into camp the week before, and so was unable to superintend the sports as has been his wont for the last three years. The course was laid out very prettily with flags by the school staff under the superintendence of the Deputy Director, Mr. Nisbet. The committee was composed of the school staff, the Forest Divisional Officers in Dehra and Mr Reynolds, Superintendent of the Forest Surveys The view from the Parade-ground, commanding as it does a complete panorama of Mussoorie, is always beautiful, and when the visitors arrived, as the evening drew on, the bold range of hills on which that favoured hill station rests formed a peculiarly suitable background to the Parade-ground and the line of well-wooded estates which bounds it on the northern side.

Tents were erected as usual for the reception of visitors, and a detachment of Municipal Police kept the enclosure which had been roped off around the tents free from the usual crowd who invariably collect when a *tamasha* of any kind takes place. The preliminary heats were run off early in the afternoon, and the finals of the different contests came off later when more spectators had arrived. Another year, it is probable that the heats will be run off during the previous week, and that the final contests only will be reserved for the day. This would be a decided improvement. The event of the afternoon was the performance of P. E. Plunkett in throwing the cricket ball; we think that the throw is a record for Northern India, if not for the whole of India. The ball was thrown against a light and somewhat variable wind, and the distance was accurately measured under the direct

supervision of the committee. The distance thrown was 116 yards, 1 foot. None of the other performances call for special mention, the entries were not so numerous as usual, probably owing to a few of the students being decidedly better than the others. The half mile was a good race, and brought out fourteen competitors, the contest for the high jump was very keen. The list of winners is appended. No times were taken :—

100 *Yards' Flat Race.* (Open)

F J. Langhorne	...	...	1
N. Chinniah	...	...	2
S. A Wood	...	...	3

There were fourteen entries, but only seven men actually started, the race resulting in an easy win for Langhorne. Chinniah and Wood had a good tussle for second place.

Broad Jump. Open to the whole school. One prize for the best native student. 11 entries.

F. J. Langhorne, 16 ft. 7 in.

Best Native Student: N. Chinniah, 15 ft. 6 in.

Won easily, the winner was not at all pressed, or would have undoubtedly jumped better.

Hurdle Race—120 yards. Open to the whole school. 12 entries.

This race was run off in two heats, the first and second man in each heat running in the final.

F. J. Langhorne	...	...	1
S. A. Wood	...	...	2

Langhorne drew away at the first hurdle, and won by 10 yards. Chinniah, who had been running in a great many events, pressed Wood as far as the eighth hurdle, when the latter drew away and came in second.

Hurdle Race for Native Students only. 7 entries.

This was run off in two heats, the first two men in each heat running in the final. The results of both the heats were very close, and in the final a very good race resulted in favour of Kashi Ram.

Kashi Ram	...	...	1
N. Chinniah	...	...	2

Both men took the hurdles simultaneously, the winner drew away after the last hurdle and won by a yard.

Throwing the Cricket Ball. Open to the whole school. One prize for the best native student. 7 entries.

P. E. Plunkett, 116 yards, 1 foot.

Best native student; N. Chinniah, 87 yards 1 foot.

A magnificent throw; W. Brewin, who was second, threw 93 yards, 1 foot

100 *Yards' Flat Race for Native Students only.* 12 entries.

This was run off in two heats, the first two in each heat running in the final.

N. Chinniah	...	...	1
Amar Nath	...	...	2

A very close race, won by 1 foot.

High Jump. Open to the whole school. One prize for the best native student. 8 entries.

S A. Wood, 5 ft., 1 in.

Best native student: Kashi Ram 4 ft., 8 in.

Graham, who was second, cleared 5 ft., but failed to jump 5 ft. 1 in.

100 *Yards' Flat Race for Forest Chaprassis.*

Amar Sing	...	...	1
Burhan-u-din	...	...	2
Pir Mahomed	...	...	3

Half Mile. Open to the whole school. 14 entries.

R. C. Farrell	...	...	1
Daya Ram.	...	...	2

Daya Ram followed by Kashi Ram forced the pace to begin with, and at half distance they were leading by 30 yards, the European students lying in a bunch behind. About 200 yards from home Farrell increased his pace and soon passed Kashi Ram, and about 80 yards from home caught Daya Ram and won a good race by 15 yards.

100 *Yards' Flat Race for Gurkha Riflemen.* 8 entries.

This was run in two heats and resulted as shown below :—

Tikaram Kuar	..	...	1
Nathu	...	...	2
Naik Parbal Gutung	...	...	3

The Tug-of-war brought the contests to a conclusion. The sides were Seniors *vs.* Juniors, and resulted in an easy win for the Seniors, which they ascribed to the muscle-forming properties of the hill tour made annually in the Jaunsar Forest Division in the hot weather. The prizes were distributed by Mrs. Garstin at 6 P M., the names of the winners being called out by the Deputy Director. Plunkett, Langhorne, Chinniah and Pir Mahomed came in for the greatest share of applause. Cheers were then given for Mrs. Garstin, the ladies, the Deputy Director, and the Instructors; and then the proceedings terminated. The chief brunt of the work in the actual laying out of the course fell on Forest Ranger Birbal and his assistants, and he proved himself quite equal to the task.—*(Pioneer).*

VI.—EXTRACTS, NOTES AND QUERIES.

Woods used in India for the Construction of beer-barrels.

We have received the following extract from the Inspector-General of Forests :—Before proceeding to discuss the trade in beers and ales, it is necessary to say something about the construction of beer-barrels, etc. The barrels or casks used in the breweries of this country are almost without exception constructed of oak, and are either made up in India from rough staves imported from the Baltic, or imported in shook, *i.e.*, bundles from London, and re-made in this country. Several attempts have been made to utilise the indigenous timbers of this country for barrel-making, but the extensive and various forests of India have failed up to the present moment in producing a wood good enough to replace the English or European oak. Sal (*Shorea robusta*) has been tried with some success in the construction of vats. White cedar from the Malabar Coast makes a good looking vat, but its use is somewhat dangerous in consequence of the absorbent nature of the wood rendering it very liable to crust. The English oak would find a strong competition in the Indian ash and teak if the former could be got in larger quantity and the latter at cheaper rates. Deodar, and the wood of pines generally impart their resinous properties to the beer. The brewers of India are very anxious to find a wood which would successfully compete with the expensive and indispensable English oak, but hitherto the efforts to find such a timber have been unsuccessful. The valuable characteristics of oak are its freedom from knots, its density, durability and lightness. It is also non-absorbent, and thus not liable to impart its resin to the beer.

In some experiments tried with the wood of various oaks, as materials for beer-barrels, Messrs. E. Dyer & Co., of the Burma Brewery, found casks made from two varieties (*Quercus glauca* and *Quercus serrata*) useless, as the wood was too porous and the beer oozed. A third species (*Quercus semiserrata*) is reported to have good, straight-grained wood, free of knots, very nearly resembling imported oak, and the casks made out of it retained the beer well. Unfortunately the difficulties in the way of the transport render its price prohibitive. But if the economic value of the tree comes to be known, and its cultivation on a wide scale is undertaken in suitable localities, the gradual extension and improvement of internal communications may in time bring the wood into the market.

Quercus semiserrata (*thitkya*, Burma,) is an evergreen tree, found on the plains of Assam and Cachar and on the Garo and Khasia Hills, up an elevation of 3,000 feet. It occurs also in Burma from Pegu to Tenasserim.—(*Indian Agriculturist, October 1st*, 1894.)

On the Utilisation of Waste Produce of Forest and Woodlands.

The successful culture of forest trees is a matter of much importance to landed proprietors, although at the same time it is very important to be able to turn the trees to the best account after they have attained the years of maturity, so that root, stem, and branch may be utilised to the best advantage and nothing lost. Tree roots are often left in the ground to rot, but I have found the roots of many species capable of being turned to account for profit in several ways. The roots of the larch, elm and spruce when of proper size and shape, are valuable for making knees, for boat-building and other purposes in rural economy; the price varies considerably according to size, shape, and quality, but as a general rule I have found them realize more than double the price of the wood of the stem. The most expeditious way of extracting and preparing them in the forest is to cut the roots at the proper distance from the base of the stem, than, by attaching a rope to the top of the tree, and taking advantage of the leverage of the stem, the tree can be pulled down and the roots torn up at a trifling cost in comparison with that of felling the tree first and then grubbing up the root after. The stem of the tree should then be cut off with a saw, about 18 in. or 2 ft. from the base of the root, in order to form the shape of the knee. I have used the small surface roots of the common spruce and birch for weaving rough baskets, creels, and hampers; the best roots for this purpose are generally to be fonnd in mossy ground. where they run along the surface and are often of great length, fine in texture, and easily extracted. In some soils and situations the roots of the common ash and hazel can be turned to good account by the cabinet-maker and others for veneering and fancy work of different kinds. The roots of both species often exhibit great variety in texture and colour; sometimes they become stained of a blackish hue mixed with red, and as they both take on a fine polish, they are considered by some to be little inferior to that of ebony. Although the roots of the fir tribe of trees are often left in the ground to rot and decay, yet they are capable of being utilised for firewood; I have found the roots of the Scotch Fir to be the best for this purpose, as the fibrous texture of the roots is generally pretty well impregnated with resin, which enhances their value very much in kindling fire. When the roots are dug up they are cut with an axe into fragments of about 11 in. in length; they are then tied into bundles of from 8 to 10 in. in diameter and sold at the rate of one penny, and sometimes twopence, per bundle. In some parts of the country there are parties who make a trade of preparing firewood in this way, and

thus act the part of a middleman between the landlord and consumer. These middlemen occasionally pay so much for the privilege of extracting the roots, while at other times they get them free of charge, as the landlord in many cases looks upon it as an advantage in his favour to get rid of the roots as a preliminary step in preparing the ground for replanting. It should be explained here that these roots and stumps when left in the ground are used by the pine beetle and pine weevil for breeding purposes, hence the proprietor's advantage in getting rid of them. Dead trees and fir wood that cannot be used for any better purpose are often sold to these middlemen, who cut and split them up into small pieces some 6 or 8 in long, tie them into bundles about 6 in. in diameter and sell them at one halfpenny each or three for a penny. Of late, however, a new market has sprung up in this country for wood of young growth and inferior quality for the making of paper. The wood of whatever species of tree must all be white in colour, red heartwood is unsuitable and is not used, which is so far in favour of the vendor as it can generally be utilised in many ways to better advantage. In preparing the wood for this purpose, the outer and inner bark or skin has to be removed, and the wood cut into lengths of from 3 to 6 ft. In a letter of inquiry which I have just received, the writer says: "I can take any quantity you can supply up to 20,000 tons at 20s. per ton, delivered at Barrow." The bark can be removed from the wood with great facility in early summer and when birch, larch, Spanish chestnut, and oak are used, the bark had better be dried in a careful manner, and sold to the best advantage for tanning purposes. The price of these barks varies considerably in different years, according to supply, demand, and quality. The lowest price which I have received for larch bark was 25s. per ton, and the highest for that of oak, which of late years averaged from four to six pounds per ton. The bark, chips of wood, young growth of other species of trees that cannot be utilised for other purposes, should be used for fuel, or converted into manure by burning, when the ashes can then be used for top-dressing grass lawns and other purposes. Wood ashes contain all the required elements of plant-nutrition except nitrogen. 100 lbs. of potash, 3½ lbs. of soda, 67 lbs. of lime and magnesia, and 5¼ lbs. of phosphoric acid. When used to improve exhausted soil in fruit-tree culture, wood ashes has no equal, at any rate the writer has used it for many years with the most happy results, as it never produces canker or any other disease at the roots, and improves the growth and health of the trees immensely. The common birch is not considered by many to be a very profitable tree, yet it has some peculiar merits which should not be overlooked. In the first place it not only grows, but also reproduces itself on cold, boggy ground in wet, hollow places, as well as on poor, hard, inorganic matter among the chinks and fissures of rock

on bare, exposed situations where few other trees will grow or attain anything like the size of useful timber. When thinning natural plantations of this class I sold the thinnings at the rate of 12s. 6d per ton. All shapes and sizes were taken, from branches half-inch in diameter up to any size, and where possible, the bark was used for tanning purposes. Then, if we deduct 1s. 6d. per ton for cutting and preparing the wood, and 1s. per ton for cartage to the depôt, we have a net balance of 10s. per ton in favour of the proprietor for his timber The charge made of 1s. 6d. per ton likewise covers the expense of thinning. The top branches and twigs were utilised for making besoms, thatching shelter-sheds for cattle, erecting screen and shelter fences, and for fuel In many parts of the Highlands of Scotland, as well as some parts of Ireland, the birch is looked upon as the husbandman's tree ; the wood is used for the making of all kinds of agricultural implements, as well as household furniture, and the roots and branches for fuel and other purposes, so that every part of the tree is turned to good account. In some parts of the country the wood is likewise used for smoking fish and hams, as it is considered to impart an agreeable flavor which is relished and esteemed by many The bark of the birch often commands a ready sale among fishermen, and when it can be had is preferred before that of any other tree for tanning their nets and cordage, as it is not only lasting, but also imparts a soft elastic finish to the fibre of the cordage, which is considered an advantage. When the bark is well saved it often realises £5 per ton, or more, according to quality. The common alder is another hardy, thrifty tree that can be turned to good account. It grows and attains a profitable size of timber on wet, marshy ground that cannot be thoroughly drained, and when cutting down the trees in such situations the writer sold all shapes and sizes of the wood from 6 in. in diameter and upwards at 20s. per ton, and sizes from 6 in. to 3½ in. in diameter at 8s. per ton, the purchaser to take delivery at his own expense. The branches and twigs were sold at 1s. per load, buyers to collect and remove the stuff at their own expense. These were used for firewood and shelter-fences about farms and other places. This tree is not planted to the extent which its merits deserve, at any rate the writer could never supply the wood to meet all demands at the the above prices, which he found on the whole to be very remunerative. The tree is very tenacious of life, and of rapid growth ; the roots left in the ground produce suckers, which form excellent coppice-wood, which after a growth of about eight years, can be profitably cut for making hurdles, crets, &c.; while the young twigs and catkins gathered and prepared in spring produce an excellent dye, the latter of a greenish, and the former of a light brown colour.

The top and lop of the willow and poplar tribe of trees being of a soft, white colour is adapted for paper-making and many other purposes in rural economy where extreme lightness is requisite. Branches of a suitable size are made into sheep-hurdles,

while small flexible twigs can be used for making rough creels and hampers In some parts of the country the branches are also used in the formation of shelter fences, by planting them about 18 in deep in the ground, and some 10 or 12 in. apart

Here they soon emit roots and by a little care and attention in training and pruning the young growth, a substantial, lasting fence can be formed at a trifling cost. I have also found the branches capable of being used as piles along the banks of rivers to form a bulwark to prevent the water during a spate from encroaching and washing away the earth along the margin. The seeds of the aspen poplar (*P. tremula*) are often spread by the wind throughout plantations, where they vegetate and form young growth among hardy natural grasses and other plants that are capable of being utilised for making hay When such is the case, my practice has been to cut the whole together and have it properly dried, when it is then built into a stack, mixing a little salt with the stuff as the work of building proceeds, by which means I found the poplar shoots to be eaten during winter with avidity by sheep, cattle, horse , and deer, so that in this respect it has proved to be a valuable forage plant. In many parts of Scotland, England, and Ireland the trees and surface of the ground are to a considerable extent clad with ivy, and, as it is one of the best forage plants with which the writer is acquainted, it is astonishing that it has not been utilised to a larger extent for feeding purposes Many years ago I observed that sheep and deer preferred ivy to turnips or grass, from which circumstance my practice has been to utilise all ivy thinnings and clippings, as well as that attached to trees, for feeding these animals occasionally when it could be had during winter. They eat the leaves and bark of the stems with such a relish that I believe it to be a wholesome, nutritious tonic.

When thinning young Scotch fir plantations I have occasionally turned the branches and young growth to good account for feeding hares, rabbits, and deer in the vicinity of newly-planted plantations of hard frost and snow. Such plantations often suffer serious damage by these vermin peeling the stems and cutting over the top growth of the plants. Under such conditions my plan has been to cart a quantity of these green branches and have them spread out on the surface of the ground here and there around the margin of the plantation, where they immediately attracted the attention of the animals, who delight to eat the leaves, twigs, and bark at this particular season of the year. The branches of the ash, oak, holly, and laburnum, when they can be had, may also be utilised with advantage for the same purpose By this means the animals are provided with food more to their liking than the young plants, and if the supply is kept up until such time as the storm breaks up, the damage to a large extent is past, and the plants safe.

These peeled branches can then be sold for firewood, and sometimes for the making of fancy rustic work, and realise about 1s. per load, and occasionally more, according to quality. Scotch fir branches, however, of young growth, are often wanted for rustic work with the bark attached, and in this case I have made the purchaser collect and remove the stuff from the plantations at his own expense, charging him at the same rate per load as the former. In some parts of the country where coals are scarce and dear the top and lop of Scotch fir and other trees can be utilised with advantage for fuel. As, for example, during the time that the new Castle was building at Balmoral, which covered a period of fully six years from 1853 till 1859, the writer supplied the tradesmen's bothies, about 20 in number, with fir branches for firing, and as coals were often as high in price as 25s and 30s per ton, the saving effected here was considerable. Another important advantage in this case was that the forest was kept clean and tidy at a trifling cost. All twigs and stuff of small size were collected and burned on the spot, the ashes spread out upon the surface, and the bare spots occasioned by the fires sown with a mixture of hardy grass-seeds suitable for such situations, which soon covered the surface with nutritious grass which proved valuable as pasture for deer and cattle. By this system of management everything was turned to good account; and besides, by the removal of dead wood and branches, which harbour insect pests destructive to pinetree growth, their numbers were kept within bounds to such an extent that very little damage was done to the healthy development of the trees. In some of the extensive peat-bogs in Ireland and other places fir branches have been used to a pretty large extent in the formation of roads. The branches are laid in a regular, uniform manner on the surface of the bog as a base for harder material, and from the well-known antiseptic properties of peat the wood is kept for an indefinite length of time almost in a perfect state of preservation. In the course of carrying out estate improvements the writer has used the branches for this purpose extensively, and found them to be quite free of rot after being underground for a period of thirty years. The cones of many of the coniferous tribe of trees are often allowed to go to waste for want of a little care and attention on the part of the cultivator, whereas by a little painstaking they may be turned to good account as a source of profit. The cones of the native Scotch fir in particular should be collected in the natural forest, and the seed for raising young plants, as the trees are not only harder, but the wood of superior quality to that of trees of the same species raised from seeds of the foreign origin. On the other hand, the cones of the larch had better be collected in Ireland, where the trees are never affected with blotch, ulceration, or blister. Coniferous trees of recent introduction make remarkable progress in that country, and are generally very prolific in the production of seed.

In the year 1861-62 the writer sold cones of *Picea Nobilis* at one guinea each. Of course the cones were carefully impregnated with male pollen to ensure the fertility of the seed. This important branch of arboriculture is both interesting and instructive, and shows what can be done in utilising the seed for the raising of young trees as a source of ornament, profit, and utility.

Although the seed of many species of deciduous trees are often allowed to fall to the ground or be blown away by the wind and lost, yet, in many cases, when they are thoroughly matured in autumn, they can with a little care and attention be utilised for the raising of young plants, and some few species, such as the beech, oak and chestnut, produce fruit that is relished by pigs, sheep, and deer, while the fruit of the walnut is relished by many people as a nutritious article of diet. The top branches of hardwood trees, when of suitable size and shape, are often in demand for pea-stakes and the formation of rustic fences, and are often sold at rates ranging from 2s. 6d. to 5s. per load, according to quality and the cost of transit. Peeled oak branches, however, that can be used for building rustic bridges, seats, and various shapes and forms of ornamental fences and fancy work, realise a higher price than that indicated. The inferior timber of beech trees is used for smoking different species of fish, and such pieces as are free of rot or other blemish are extensively used for making toys, stocks for carpenters' tools, and a variety of other purposes where cheap timber is used. Beech and hornbean timber are both esteemed in particular for firewood, and the charcoal produced from the wood of both species is considered to be of a very superior quality. In working up the top branches of hardwood trees to the best advantage all pieces that are pretty straight and 3½ inches in diameter can be sold for mining purposes at rates ranging from 7s. 6d. to 10s per ton, purchaser to take delivery at his own expense. The tops of hardwood as well as fir trees can often be turned to good account for fencing-posts. Sometimes they are in demand in the round state, but very often are wanted cut to the following dimensions :—6′ × 7″ × 3″, or 6′ × 6″ × 4″ ; when prepared in this way I generally sold them at 10d. per cubic foot, which gave a favourable and profitable return to the proprietor. The same class of timber can often be utilised for halftree-rafters for roofing sheds. These are prepared by cutting off a slab along the side of the piece, then by turning it over to rest on the flat side thus prepared, it is cut with the saw right along the centre into two halves, so that each piece of timber forms a pair of rafters—hence the name of halftree-rafters. Small pieces of oak, elm, ash, and sycamore may likewise be cut into staves and headings for casks, and are generally in demand ¾-inch thick, and the length according to specification. Concrete frames are occassionally wanted by builders 18 inches long and 1 inch square. I have generally cut these from fragments of Scotch and spruce fir trees.

In cutting up wood at saw-mills it is a matter of much importance on the score of thrift and economy to use thin saws. Wood merchants who try to make the most of the wood are so well aware of the utility of using thin saws that they seldom use them thicker than No. 14 and 15 by the wire gauge Saws used for slabbing and cutting up rough inferior timber, as well as cross-cuts, may be No. 12 and 13 by the wire gauge The reason for using thin saws is of a twofold nature. In the first place, it takes less mechanical power to drive the machinery and saws, and in the second place there is less waste of timber. In cases where steam power is used the sawdust should be used as fuel for heating the boilers, but if not wanted for such a purpose it may be sold to the best advantage, and in large towns is generally sold by dealers at from *5d.* to *6d.* per bag. All pieces and fragments of hardwood trees unsuitable for any other purpose, had better be converted into charcoal, and in doing so its quality is greatly improved by the removal of the bark previous to charring. This applies in particular to different species of chestnut, limetree, and elm Some species of hardwood trees occasionally produce valuable burrwood here and there on the stems and branches. These burrs, as they are called, consist of gnarled woody protuberances, finely twisted and knotted, and when cut up they are found in the majority of cases to be richly veined, which enhances their value very much when used for veneering and other ornamental purposes. The trees which are most prolific in producing these burrs are the birch, elm, oak, alder, and ash, and in dressing and preparing these trees for sale, the burrs are often cut off with the axe and allowed to go to waste, whereas in many cases they are the most valuable part of the tree In order to make the most of this class of wood, the bark should be carefully removed in early summer, by which means the carpenter or cabinet-maker will be better enabled to form a correct estimate of its true value, and cut it out himself, or give directions how it is to be cut up to the best advantage for his requirements. Thoroughly decomposed leaves of deciduous trees make an excellent and valuable manure, and as it is beneficial to a large extent in promoting root growth, it can be used with advantage at the time of planting out ornamental trees and other valuable plants to give them a good start and prevent failure. The only risk which I have ever observed in using leaf-mould for such a purpose was in cases where chips and fragments of wood had been gathered along with the leaves, and as these often contain the spores of fungi they are apt to become active when placed below the surface, and thus impregnate the roots and kill the tree. In order to prevent this state of things, all twigs and chips of wood should be separated from the leaves before placing them in the depôt to rot. Leaf-mould makes an excellent top-dressing for grass lawns and for restoring exhausted soil to fertility, therefore it should be utilised to the best advantage to prevent waste.

(OLD FORESTER.—*In the Timber Trades Journal.*)

Message from Monsieur C. Broillard to French-trained Forest Officers.

About the beginning of this year we received from Monsieur C. Broillard, formerly Professor at the Forest School at Nancy, then Conservator at Dijon, and now in retirement Editor of the *Revue des Eaux et Forêts*, a copy of his book 'Le traitement des bois en France,' which was duly reviewed in our pages. In reply to a letter of ours thanking him for it and for the inscription which it bore "to the English-French Foresters of India, with kindly remembrance," M. Broillard writes "Je garde avec beaucoup de satisfaction la belle coupe que les pupilles Anglais de l'Inde m'ont envoce en 1881, et je vous prie de leur témoigner á l'occasion mes affectueux sentiments."

VII.—TIMBER & PRODUCE TRADE

The Teak Market.

MESSRS. HOAR AND BROWN report :—

	Timber. loads.	Planks. loads.	Blocks. loads.	Total. loads.
Stock August 1st, 1894	4,459	2,011	77	6,547
Landings	589	246	...	835
	5,048	2,257	77	7,382
Deliveries	494	212	...	706
Stock August 31st, 1894	4,554	2,045	77	6,676

The stock of timber has increased slightly this month, the figures at the present time showing 4,554 loads, being 543 loads less than the quantity held at the end of June

Arrivals have not been so numerous in consequence of cargoes, which were expected to discharge here for purposes of selection, being now ordered direct to their destination.

Considering the limited home demand among carriage builders, &c., coupled with the scarcity of speculation, it is not regretted that imports have fallen off. However, prices still remain as they were for first-class wood, and the usual low figures are being quoted for second and third-class goods.

The market may still be described as flat, although the outlook is more promising.

Business in planks is fairly brisk with low priced parcels, the figures accepted by shippers having lately beaten record, but it is hoped the advance in rupee paper may cause a steadier market. Indications of this are already observed among shippers of later parcels, who are now asking an advance upon the earlier shipments of similar qualities held by the dealers. It is probable the value of planks may improve, provided always the importations are limited. Stocks remain practically the same.

MESSRS. DENNY, MOTT, AND DIXON report deliveries from the docks in London last month 716 loads, as against 1,264 loads for the corresponding month last year, and of this month's restricted delivery the majority was for export, showing even increased apathy in the general home demand.

The relation of supply to demand has altered but little since our last advices, and the landed stocks of logs, although considerably below the average at the time of year, are ample to meet all likely need that can be foreseen at present. Of planks, the visible quantity is apparently excessive, but as a large proportion of the sawn stuff sent by ill-advised shippers is quite unsaleable in this market, the supply of really good marketable planks is not actually too large should an average autumn demand spring up. In the floating cargo department there have been more sales for speculation than of late, although the prices reported can hardly cover the present import cost. There seems, however, no room left for economising in the direction of cost and freight, both these factors being at almost the lowest point yet touched, and saw-millers in Burmah and shipowners are alike refusing further to cut their prices and freights. In respect also to the difficult question as to the probable course of the rupee-exchange, we are inclined to agree with those experts who are of opinion that it has touched its lowest point, and that the recovery already shown during the past fortnight will be maintained for some time to come.

Churchill and Sim's Circular.

November 4th, 1894.

EAST INDIA TEAK.—The deliveries for the first three quarters of this year amount to 8,471 loads against 10,148 loads for the same period of 1893, and for September this year to 717 loads as compared with 1,385 loads in September, 1893. The figures reflect pretty accurately the dulness of the demand for general purposes The prices are steady at a low level both for landed and floating stock. The visible supply of the latter continues amply sufficient for probable requirements.

RED-WOOD —The stock is small, but demand very quiet.

SATINWOOD.—Finely figured logs would sell well, but there is very little demand for plain wood.

EBONY.—Large, sound, well-grown logs, in small parcels, would realize very fair prices.

PRICE CURRENT.

Indian Teak	per load	£10.	to	£16
Satinwood	per foot superficial	6d.	to	12d.
Rosewood	„ ton	£5.	to	£8.
Ebony	„ ton	£6.	to	£8

MARKET RATES OF PRODUCTS.

Tropical Agriculturist, November, 1894.

Cardamoms	per ℔	2s.	to	2s. 6d.
Croton seeds	per cwt.	20s.	to	27s 6d.
Cutch	„	20s.	to	32s.
Gum Arabic, Madras	„	15s.	to	30s
Gum Kino	„	£15	to	£18
Indian Rubber, Assam,	per ℔.	1s. 7d.	to	1s. 10d.
„ Burma	„	1s 7d.	to	2s.
Myrabolams, Bombay,	per cwt.	7s. 6d.	to	9s. 3d.
„ Jubbulpore	„	6s. 3d.	to	7s.
„ Godavari	„	6s	to	6s. 9d
Nux Vomica, good	„	6s.	to	10s.
Oil Lemon grass	per ℔,	1¾d		
Orchella, Ceylon	per ton	15s.	to	22s.
Redwood	„	£3. 10s	to	£4
Sandalwood, logs	„	£35	to	£55
„ chips	„	£9	to	£30
Seed lac	,	30s.	to	90s.
Tamarinds	„	8s.	to	9s.

X.—EXTRACTS FROM OFFICIAL GAZETTES.

1.—Gazette of India.

28th September, 1894.—No. 972-F.—Privilege leave for one month and twenty-nine days, under Articles 277 and 291 of the Civil Service Regulations, is granted to Mr. C. Bagshawe, Conservator of Forests, 1st grade, Berar, with effect from the 27th August, 1894.

Mr H. Calthrop, Deputy Conservator, 4th (officiating 3rd) grade Berar, is appointed to officiate in the 3rd grade of Conservators, and to hold charge of the Berar Forest Circle during Mr Bagshawe's absence, or until further orders.

The Notification of this Department No. 848-F., dated the 30th ultimo, is hereby cancelled.

19th October, 1894.—No. 1045-F.—Mr. F. B. Dickinson, Deputy Conservator, 1st grade, Central Provinces, and officiating Conservator 3rd grade, Burma, is confirmed in the latter grade, with effect from 10th April, 1894.

No. 1048-F.—Mr. E P. Dansey, Conservator of Forests, 2nd grade, is, on return from furlough, posted to the Punjab in charge of the provincial Forest Circle.

2.—Madras Gazette.

19th September, 1894.—R. Venkatesa Mudaliar, Forest Ranger, is transferred from Kurnool to Godavari, *vice* A. Eggia Sastri, deceased.

23rd September, 1894.—Mr. E. C. M. Mascurenhas, Ranger on Rs. 50, North Coimbatore, is granted privilege leave (on medical grounds) for one month, under Article 291 of the Civil Service Regulations, from 3rd September, 1894

11th October, 1894.—Mr. E. C. M. Mascurenhas, Ranger on Rs. 50, North Coimbatore, is granted an extension of ten days' leave in continuation of the one month's privilege leave (on medical certificate) published on page 1486 of Part II of the *Fort St. George Gazette*, dated 2nd October, 1894.

12th October, 1894.—No 486.—Mr S. C. Moss, Extra Assistant Conservator of Forests, is granted privilege leave for three months, under Article 291 of the Civil Service Regulations.

19th October, 1894.—No. 499.—Mr. Stephen Cox, Assistant Conservator of Forests, Kurnool, is granted examination leave not exceeding three months, under paragraph 51 of the Madras Forest Department Code.

No. 500 —Mr. F. Foulkes, District Forest Officer, South Canara, is granted privilege leave for three days, in extension of the two months' privilege leave notified at page 857 of Part I of the *Fort St George Gazette*, dated 17th July, 1894.

22nd October, 1894.—No 501.—Mr Rhodes Morgan, Acting District Forest Officer, South Canara, is granted furlough for two years, under Article 340 (*b*) of the Civil Service Regulations.

22nd October, 1894 —No. 504 :—

No	Name of officer.	District	Nature of charge	Remarks.
1	Mr. H. B Bryant, Deputy Conservator of Forests, 4th grade	Tinnevelly	District Forest Officer,	To join on relief by Mr. Cowley-Brown
2	Mr F. C. L. Cowley-Brown Assistant Conservator of Forests, 1st grade	South Coimbatore.	Acting District Forest Officers	To join forthwith.

23rd October, 1894.—G. Arulanantham Pillai, Ranger on Rs. 50, Nilgiri District is granted leave without allowances, under Article 372 of the Civil Service Regulations, for fifteen days from the date of relief.

23rd October, 1894. —The three months' privilege leave on medical certificate published in page 1326 of Part II of the *Fort St. George Gazette*, dated 28th August, 1894, to Mr. H. E. Kelly, Ranger on Rs 50, South Coimbatore Division, is commuted into sick leave, and the same is extended by one month.

24th October, 1894 —Mr. E. C. M. Mascurenhas, Ranger on Rs. 50, North Coimbatore, is granted a further extension of two weeks' leave, in continuation of ten days' leave published in page 1570 of Part II of the *Fort St. George Gazette*, dated 16th October, 1894.

3.—Bombay Gazette.

24th September, 1894.—Mr. Haripad Mitra, Extra Assistant Conservator of Forests, who proceeded on privilege leave on the afternoon of 4th August, 1894, resumed charge of duties on the 18th September, 1894, before office hours

3rd October 1894.—No. 8165 —His Excellency the Governor in Council is pleased to place the services of Mr. J. H Clabby, Extra Assistant Conservator of Forests, 3rd grade, at the disposal of the Government of India for employment as Forest Officer to the Barwani State.

10th October, 1894 —No. 8290.—His Excellency the Governor in Council is pleased to make the following appointments :—

Mr. W. G. Betham, on return to duty, to resume charge of the Divisional Forest Office Kolaba

Mr F. R. Desai, on relief, to do duty as Divisional Forest Officer, West Thana vice Mr. G. P. Millett

10th October, 1894.—No 8311 —Mr W. G. Betham, Deputy Conservator of Forests, 2nd grade and Divisional Forest Officer, Kolaba, is allowed leave on medical certificate for two months under Article 369 of the Civil Service Regulations.

12th October, 1894 —No 8373.—His Excellency the Governor in Council is pleased to appoint Mr. F. R. Desai to be Deputy Conservator of Forests, of Sind Circle, in place of Mr W. S. Hexton, deceased.

19th October, 1894.—Mr J. H. Clabby, Extra Assistant Conservator of Forests, relinquished charge of his duties on the afternoon of the 17th instant, and proceeded to join his appointment to the Burwani State.

23rd October, 1894 —No. 8697.—His Excellency the Governor in Council is pleased to make the following transfers :—

Mr. C. M. Hodgson to be Divisional Forest Officer, West Thana.

Mr W. F. D Fisher to be Divisional Forest Officer, Sholapur.

23*rd October*, 1894.—No. 8698.—The undermentioned officers passed an examination in Marathi according to the Lower Standard on the 11th October, 1894 :—

1. Mr Dattatraya M. Bijur, Personal Assistant to the Conservator of Forests, S. C.
2. { Mr. V. P. Ribeiro, Extra Assistant Conservator of Forests, Bassein, Thana.
   Mr J. H Clabby, Extra Assistant Conservator of Forests, 3rd grade. }
4 Mr. G. R. Duxbury, Assistant Conservator of Forests, Poona.

The names are arranged in the order of merit.

23*rd October*, 1894.—No. 8699.—The undermentioned officers passed an examination in Marathi according to the Higher Standard on the 10th October, 1894 :—

1. Mr. V. P. Ribeiro, Extra Assistant Conservator of Forests, Bassein. Thana
2. { Mr Dattatraya H. Bijur, Personal Assistant to the Conservator of Forests, S. C.
   Mr. A. C Robinson, Sub-Divisional Forest Officer, Kolaba }
4. Mr J H. Clabby, Extra Assistant Conservator of Forests, 3rd grade.

The names are arranged in the order of merit.

23*rd October*, 1894 —Messrs. H W. Keys, Deputy Conservator of Forests, Divisional Forest Officer of West Khandesh, and R. H. Madan, Divisional Forest Officer of East Khandesh, respectively delivered over and received charge of the West Khandesh Division on the 16th October, 1894, in the afternoon.

23*rd October*, 1894,—Messrs. F. R. Dasai and W. G. Betham, Deputy Conservators, respectively delivered over and received charge of the Divisional Forest Office, Kolaba, on the forenoon of 16th day of October, 1894.

5—N-W. P. AND OUDH GAZETTE.

3*rd October*, 1894.—No. 3206.—Babu Raghu Nath Pathak, Extra Assistant Conservator of Forests, in charge of the Garhwal Forest Division of the Central Circle, to hold charge of the Kumaun Forest Division of the same circle, in addition to his own duties, until relieved by Mr W. Shakespear.

3*rd October*, 1894.—No. 3207.—Mr. A. G. Hobart-Hampden, Deputy Conservator of Forests, on being relieved by Babu Raghu Nath Pathak, from the charge of the Kumaun to that of the Ganges Forest Division of the Central Circle.

3*rd October*, 1894.—No. 3208.—Mr. W. Shakespear, Deputy Conservator of Forests, on being relieved by Mr. A. G. Hobart-Hampden, from the charge of the Ganges to that of the Kumaun Forest Division of the Central Circle.

5*th October*, 1894.—No. 3267.—Mr. H. G. Billson, Assistant Conservator of Forests, attached to the Dehra Dun Forest Division of the School Circle, to the charge of the Kheri Forest Division of the Oudh Circle.

6.—PUNJAB GAZETTE.

The 26th October, 1894.—No. 514.—Mr. E. M. Coventry, Assistant Conservator of Forests, returned from three months' privilege leave sanctioned in Punjab Government Notification No. 367, dated 9th July, 1894, on the forenoon of the 3rd October, 1894.

7.—CENTRAL PROVINCES GAZETTE.

25th September, 1894.—No. 4265.—With reference to order No. 3540, dated the 9th ultimo, Mr. Narain Pershad, Forest Ranger, assumed charge of the Sambalpur Forest Division on the forenoon of the 11th instant.

28th September, 1894.—No. 4320.—Mr. H. Moore, Deputy Conservator of Forests, Betul, availed himself, on the afternoon of the 1st instant, of the one month's privilege leave granted him by Order No. 4070, dated the 12th instant, making over charge of his duties to Mr. S. G. Paranjpe, Extra-Assistant Conservator of Forests.

4th October, 1894.—No. 4357.—Mr. P. H. Clutterbuck, Assistant Conservator of Forests and Forest Divisional Officer, Chhindwara Forest Division, is appointed a Working-Plans Officer, and deputed to the Chanda Forest Division.

4th October, 1894.—No. 4358.—Mr. W. G. Gilmore, Forest Ranger, in the Chanda Forest Division, is posted temporarily to the charge of the Chhindwara Forest Division, to work under the immediate orders of the Deputy Commissioner, during the absence of Mr. Clutterbuck on deputation, or until further orders.

4th October, 1894.—No. 4361.—Mr F. S. Barker, Deputy Conservator of Forests, has been granted, by Her Majesty's Secretary of State for India, three months' extraordinary leave granted him by Order No. 435, dated the 20th January last.

4th October, 1894.—No 4362.—Mr F. S. Barker, Deputy Conservator of Forests, has been permitted, by Her Majesty's Secretary of State for India, to return to duty within the period of the leave granted him by the following Notifications and Orders:—

Notification No. 47, dated the 4th January, 1893.
Notification No. 970, dated the 20th February, 1893.
Notification No. 3558, dated the 2nd August, 1893.
Order No. 435, dated the 20th January, 1894.
Order No. 4361, dated the 4th October, 1894.

24th October, 1894.—No. 4676.—Mr. C. O. Hanson, Assistant Conservator of Forests and Working-Plans Assistant in the Nagpur-Wardha Forest Division, is transferred to the Chanda Forest Division in the same capacity.

8.—BURMA GAZETTE.

24th September, 1894.—No. 16.—With reference to Revenue Department Notification No. 346, dated the 10th September, 1894, Mr. H. Carter, officiating Deputy Conservator of Forests, made over, and Mr. W. F. L. Tottenham, officiating Deputy Conservator of Forests, resumed charge of the Pegu division on the forenoon of the 11th instant.

24th September, 1894.—No. 17.—With reference to Revenue Department Notification No. 345, dated the 6th September, 1894, Mr. J. Messer, Assistant Conservator of Forests, made over, and Mr. C. Ingram, Extra Assistant Conservator of Forests, assumed charge of the Shwegyin division on the forenoon of the 13th instant.

24th September, 1894.—No. 18.—With reference to Revenue Department Notification No 345, dated the 6th September, 1894, Mr. J. Messer, Assistant Conservator of Forests, assumed charge of his duties as Personal Assistant to the Conservator of Forests, Pegu Circle, on the forenoon of the 14th instant.

24th September, 1894.—No. 16.—With reference to Revenue Department Notifications Nos. 337 and 349, dated the 4th and 11th September, 1894, respectively, Mr. H. B. Anthony, Deputy Conservator of Forests, made over, and Mr. T. H. Aplin, Deputy Conservator of Forests, received charge of, the Lower Chindwin Forest division on the afternoon of the 21st September, 1894.

24th September, 1894.—No. 370.—Mr. C. S. Rogers, Extra Assistant Conservator of Forests, is appointed to the charge of the Myadaung subdivision, in addition to his other duties, during the absence on privilege leave of Mr R. M. Kavanagh, Extra Assistant Conservator of Forests, or until further orders

29th September, 1894.—No. 19.—With reference to Revenue Department Notification No. 358, dated the 14th September, 1894, Mr. H. N. Thompson, Assistant Conservator of Forests, made over, and Mr. G. Q. Corbett, Deputy Conservator of Forests, resumed charge of the Toungoo division on the afternoon of the 25th instant.

2nd October 1894.—No. 381 (CORRIGENDUM)—In this department Notification No. 345, dated the 6th September, 1894.

for—

Mr. C. Ingram, Extra Assistant Conservator of Forests, on his return from leave, * * *

Read—

Mr. C. Ingram, Extra Assistant Conservator of Forests, on his return from the Andamans, * * *

3rd October, 1894—No 16.—With reference to Revenue Department Notification No. 370 (Forests), dated the 24th September, 1894, Mr. C. S. Rogers, Extra Assistant Conservator of Forests, took charge of Myadaung subdivision of the Katha Forest division on the forenoon of the 14th September, 1894, in addition to his other duties.

4th October, 1894.—No. 17.—Mr. C. R. Dun, officiating Deputy Conservator of Forests, returned from privilege leave granted him in Revenue Department Notification No. 183 (Forests), dated the 9th May, 1894, on the afternoon of the 15th September, 1894.

4th October, 1894.—No. 18.—With reference to Revenue Department Notification No. 334 (Forests), dated the 31st August, 1894, Mr. E. A. O'Bryen, officiating Deputy Conservator of Forests, made over, and Mr. C. R. Dun, officiating Deputy Conservator of Forests, assumed, charge of the Ruby Mines Forest division on the forenoon of the 28th September, 1894.

No. 17.— Mr. C. W. Allan, Extra Assistant Conservator of Forests, made over charge of the Paungbyin subdivision, Upper Chindwin division, to Mr J. W. Anthony, Forest Ranger, on the forenoon of the 24th September, 1894, and availed himself from that date of the one month's privilege leave granted him in Revenue Department Notification No. 339 (Forests), dated the 5th September, 1894.

11th October, 1894 No. 388 —Mr C. W. B. Anderson, Extra Assistant Conservator of Forests, under suspension, is permitted to return to duty, and is posted to the charge of the Kyauksé subdivision of the Mandalay Forest division.

No 19 (CORRIGENDUM).—In this Department Notification No. 17, dated the 4th October, 1894, Part IV of the *Burma Gazette*, dated the 13th October, 1894, *for* "on the afternoon of the 15th September, 1894," *read* "on the forenoon of the 18th September, 1894 "

18th October, 1894. No. 18.—With reference to Revenue Department Notification No 358, dated the 14th September, 1894, Mr. C B. Smales, Assistant Conservator of Forests, made over, and Mr H. N. Thompson, Assistant Conservator of Forests, received, charge of the Mingin subdivision, Lower Chindwin division, on the forenoon of the 8th October, 1894.

19th October, 1894. No. 390.. The following temporary promotions and reversions are ordered in the Forest Department :—

(1) With effect from the 1st August, 1894 :

Mr H N. Thompson, Assistant Conservator, 2nd (officiating 1st) grade, to officiate as Deputy Conservator, 4th grade.

(2) With effect from the 16th August, 1894, consequent on the grant of privilege leave to Mr. G. Q. Corbett, Deputy Conservator, 4th grade :

Mr. C L Toussaint, Deputy Conservator, 4th grade, to officiate as Deputy Conservator, 3rd grade.

Mr. J. Messer, Assistant Conservator, 2nd grade, to officiate as Deputy Conservator, 4th grade.

(3) With effect from the 9th September, 1894, consequent on the return from privilege leave of Mr. A. Weston, Deputy Conservator, 3rd grade :

Mr C. L. Toussaint, Deputy Conservator, 4th (officiating 3rd) grade, to revert to his substantive rank.

Mr. J Messer, Assistant Conservator, 2nd grade, officiating Deputy Conservator 4th grade, to officiate as Assistant Conservator, 1st grade

(4) With effect from the 11th September, 1894, consequent on the return from privilege leave of Mr. W. F. L. Tottenham, Assistant Conservator, 1st grade :

Mr. C. R Dun, Assistant Conservator, 1st grade, officiating Deputy Conservator, 4th grade, to revert to his substantive rank.

Mr. H. N. Thompson, Assistant Conservator, 2nd grade, officiating Deputy Conservator, 4th grade, to officiate as Assistant Conservator, 1st grade

(5) With effect from the 26th September, 1894, consequent on the return from privilege leave of Mr. G. Q. Corbett, Deputy Conservator, 4th (officiating 3rd) grade :

Mr. H. Jackson, Deputy Conservator, 4th (officiating 3rd) grade, to revert to his substantive rank.

Mr. G. F R. Blackwell, Deputy Conservator, 4th (officiating 3rd) grade, to revert to his substantive rank.

Mr. C. W. A. Bruce, Assistant Conservator, 1st grade, officiating Deputy Conservator, 4th grade, to revert to his substantive rank.

4th October, 1894.—No. 391.—The following postings and transfers are ordered in the Forest Department :—

Mr. C. W. Allan, Extra Assistant Conservator of Forests, on return from leave, to the charge of the Paungbyin subdivision, Upper Chindwin Forest division.

Mr. H. H. Forteath, Assistant Conservator of Forests, on return from leave, to the charge of the Gangaw sub-division, Yaw Forest division.

Mr. A. M. Burn-Murdoch, Assistant Conservator of Forests, on return from leave, to the charge of the Paungbyin subdivision, Upper Chindwin Forest division.

Mr. D. H. Allans, Extra Assistant Conservator of Forests, on being relieved by Mr. Forteath, to the Yaw Forest division.

Mr C. W. Allan, Extra Assistant Conservator of Forests, on being relieved by Mr Burn-Murdoch, the charge of the Kindat Revenue subdivision Upper Chindwin Forest division.

19th October, 1894.—No. 20.—Mr. W. A. Hearsey, Extra Assistant Conservator of Forests, availed himself of the 28 days' examination leave granted him in Revenue Department Notification No. 359, dated the 17th September, 1894, on the afternoon of the 8th October, 1894

No. 21.—Mr. W. A. Hearsey, Extra Assistant Conservator of Forests, made over, and Mr. E A. Carr, Deputy Conservator of Forests, Bhamo division, received, charge of the Shwegu subdivision, in addition to his other duties, on the afternoon of the 8th October, 1894.

23rd October, 1894.—No 20.—With reference to Revenue Department Notification No. 348 (Forests), dated the 11th September, 1894, Mr. H. B. Ward, Deputy Conservator of Forests, made over, and Mr. H. B. Anthony, Deputy Conservator of Forests, received, charge of the Henzada-Thôngwa division on the forenoon of the 12th October, 1894.

24th October, 1894.—No 21.—With reference to Revenue Department Notification No. 350 (Forests), dated the 11th September, 1894, Mr. H. B Ward, Deputy Conservator of Forests, assumed charge of the Bassein-Myaungmya division on the forenoon of the 12th October, 1894.

11.—MYSORE GAZETTE.

26th September, 1894.—No. 5807 —Mr. S. A. Bapu Rao, Assistant Conservator of Forests, was employed on General Duty in the office of the Inspector-General of Forests from the 8th August, 1893, to 23rd February, 1894.